

Best Practices and Considerations for Siting Battery Storage Systems

Will the battery storage system be sited indoors or outdoors?

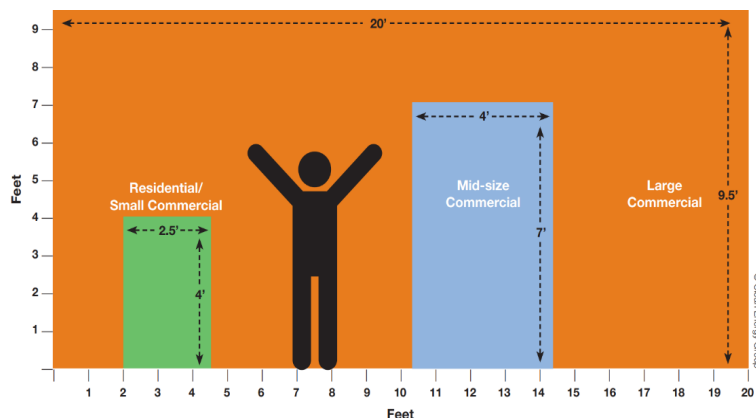
- Depending on the size of the battery and needs of the site, it is important to determine early on if the battery will be sited in the facility or outside of it.
- This decision may be impacted by any noise and sightline requirements from your local jurisdiction. It is important that the battery not create bothersome noises to site occupants or impact the building's sightline which can cause issues with local historical preservation offices.

Is there available space to install the battery storage system?

- If the battery storage system will be located indoors, it is important to confirm that there will be sufficient space, such as in a utility room or maintenance garage.
- If the battery storage system will be located outdoors, then it will most likely be housed in a storage container. The site should confirm that there is sufficient space on the property.

Figure 1. Battery storage systems come in a variety of sizes

Source: Clean Energy Group



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Does the battery storage system have access to the building's HVAC, fire suppression, and communication systems?

- Batteries generate heat like other electric equipment. Manufacturer performance warranties require that batteries operate in low temperatures and have access to adequate cooling and ventilation to avoid overheating, if they are located indoors.
- Safety measures are paramount to the safe and reliable performance of a battery storage system. Measures such as a fire suppression system and fire-rated walls will be required and should be included in the design planning stage. Installing a battery indoors may also require a retrofit of the area that includes additional safety measures.
- Batteries may have needs for performance data monitoring which will require access to secure and reliable internet connection.

If located outdoors, will the battery storage system be protected from unintended impacts?

- Batteries installed outdoors must be located away from any source of impacts in order to avoid damage (e.g. vehicle, heavy machinery collision).
- Does the site facility staff have adequate training on the procedures necessary to perform in the event that the battery storage system requires an emergency shutdown?
- The contractor should provide adequate training to the site facility staff to perform emergency shutdown procedures of the battery storage system in the event that the contractor is unavailable to perform them in a reasonable and timely manner.

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Do any of the roads, bridges, and tunnels leading to the planned installation site have vehicle weight limits or access restrictions?

- It is important to consider any logistical barriers that may inhibit the successful installation of a battery storage system. Factors like weight limits and narrow roads and tunnels to remote sites should be considered early on in the project's development cycle.

Will the battery storage system be protected from natural disasters and severe weather events (e.g. hurricanes, floods, hail)?

- The site should confirm what the 500-year flood level is and plan to site the battery storage system above it in order to avoid damage.
- The battery system should also be protected from direct sunlight exposure as the additional heat may impact the performance and longevity of the battery.
- Since batteries are often used for resilience measures, it is critical that the battery storage system is protected from storm damage so the facility can rely on it during grid outages.

Figure 2. A battery installation at the U.S. Army's Fort Carson

Source: Dennis Schroeder, NREL





Will operations and maintenance (O&M) providers and first responders have “access to” and “egress from” the battery storage system?

- Similar to PV systems, battery storage systems must be regularly maintained and inspected by a qualified O&M provider who will require access to and from the battery. Additionally, first responders must have access to the battery storage system if they are to deal with an emergency at the site.

Is there space for the battery storage system to be installed near other PV equipment?

- It may be beneficial for the site if the battery storage system is located near the rest of the PV equipment (e.g. modules, inverters, switchgear). Overall project economics might improve if less materials and equipment are needed to connect the battery and PV systems.
- Another consideration is to site the battery close to the loads it serves and to the point of common coupling where the PV system meets the facility’s internal electrical distribution system.

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